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Menssana Research Inc, Fort Lee, NJ 07024, USA. menssana@bellatlantic.net

Cardiac chest pain is accompanied by oxidative stress, which generates alkanes and other volatile organic compounds (VOCs). These VOCs are excreted in the breath and could potentially provide a rational diagnostic marker of disease. The breath methylated alkane contour (BMAC), a 3-dimensional surface plot of C4-C20 alkanes and monomethylated alkanes, provides a comprehensive set of markers of oxidative stress. In this pilot study, we compared BMACs in patients with unstable angina pectoris and in healthy volunteers. Breath VOCs were analyzed in 30 patients with unstable angina confirmed by coronary angiography and in 38 age-matched healthy volunteers with no known history of heart disease (mean age \pm SD, 62.7 \pm 12.3 years and 62.5 \pm 10.0, not significant). BMACs in both groups were compared to identify the combination of VOCs that provided the best discrimination between the 2 groups. Forward stepwise entry discriminant analysis selected 8 VOCs to construct a predictive model that correctly classified unstable angina patients with sensitivity of 90% (27 of 30) and specificity of 73.7% (28 of 38). On cross-validation, sensitivity was 83.3% (25 of 30) and specificity was 71.1% (27 of 38). We conclude that the breath test distinguished between patients with unstable angina and healthy control subjects.

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